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EXAMINER	
SHIVERS, ASHLEY L	

ART UNIT	PAPER NUMBER
2609	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/828,369	BEVERLY ET AL.	
	Examiner	Art Unit	
	Ashley L. Shivers	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-23 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 19 April 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 4 and 5 are objected to because of the following informality:

For both claims on line 1: "copying at least a portion" should be changed to --copying the at least a portion--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The inventors fail to identify what happens if this is the first packet, meaning there is no previously received packet payload data on the first buffer.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1,2, 4,5, 6, 8, 17,19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Firoozmand **(U.S. Patent No. 5,210,749)**.

Regarding claim 1, Firoozmand discloses a method for receiving packets comprising:

-setting a first precondition **(setting a threshold value; See col. 15, lines 30-31)** and a second precondition **(fetching the descriptors of the system memory buffer; See col. 17, lines 22-23)**;

-when to begin copying at least one packet payload from a first buffer of an offload engine to a receive buffer of a host memory **(when the amount of data therein exceeds the receive threshold, the controller 120 asserts RDATA to cause the network DMA controller 124 to fetch descriptors from the system memory to determine where in the system memory the network data is to be stored; See col. 17, lines 19-24)**;

--receiving at least one packet at the offload engine from a network communication link **(packets [are] received from the network; See col. 19, line 41)**;

--appending a packet payload of the at least one packet to the first buffer of the offload engine **(packets received from the network [are] stored in buffer memory 126; See col. 19, lines 41-43)**;

--determining whether the first precondition has been met based, at least in part, on a state of the first buffer **(a receive data threshold detecting means detects the presence in the receive FIFO of at least a predetermined amount of data received from the network; See col. 18, lines 65-68)**;

--determining whether the second precondition has been met based, at least in part, on the state of the first buffer (**when the buffer in the system memory, pointed to by the descriptor, becomes available, the DMA controller supplies a host acknowledgement HSACK to the network access controller 120; See col. 21, lines 13-17**);

--copying at least a portion of the first buffer of the offload engine to the receive buffer of the host memory if the first precondition has been met (**this threshold enables the buffer 126 to begin transferring receive data to the system while data is incoming from the network; See col. 15, lines 49-52**); and

--repeating the method until the second precondition has been met (**See col. 17, lines 19-24**).

Regarding claim 2, Firoozmand further discloses the method of claim 1 further comprising receiving another packet from the network communication link if the second precondition has not been met (**if the frame is defective it is flushed from the buffer and not transferred to the system, therefore a new packet must be received; See col. 16, lines 3-10**).

Regarding claim 4, Firoozmand further discloses the method of claim 1 wherein said copying at least a portion of the first buffer to the receive buffer comprises copying a portion of the packet payload (**the buffer [transfers] receive data to the system; See col. 15, lines 50-51**).

Regarding claim 5, Firoozmand further discloses the method of claim 4 wherein said copying at least a portion of the first buffer to the receive buffer comprises copying the portion of the packet payload as well as at least one previously received packet payload of the first buffer **(the receive packets in the buffer memory are stored contiguously in succession, causing the buffer memory receive area to have the configuration of a circular queue; See col. 15, lines 22-25)**.

Regarding claim 6, Firoozmand further discloses the method of claim 1 wherein said copying the at least a portion of the first buffer of the offload engine to the receive buffer of the host memory comprises a DMA copy of the at least a portion of the first buffer and releasing the at least a portion of the first buffer **(the data addressed in the buffer 126 is written to BDATA and is latched in the network DMA controller 124 to be supplied to the designated buffer in system memory; See col. 17, lines 35-38)**.

Regarding claim 8, Firoozmand further discloses the method of claim 1 wherein the first precondition comprises a predetermined number of bytes in the first buffer of the offload engine **(a transmit data threshold detecting the presence of at least a predetermined amount of data to be transmitted to said network; See col. 18, lines 65-68)**.

Regarding claim 17, Firoozmand discloses an article comprising:

-a storage medium **(buffer 126; See Fig. 4)** of a network adapter comprising machine-readable instructions **(provided by the medium access controller; See col. 12, lines 59-67)** stored thereon to:

--set a first **(See col. 15, lines 30-31)** and a second precondition **(See col. 17, lines 22-23)** to copy received packets in a first buffer of a network offload engine of the network adapter to a receive buffer at a host memory in response to, at least in part, meeting the first precondition at the network adapter **(See col. 15, lines 49-52)**;

--append a packet payload to the first buffer of the offload engine **(See col. 19, lines 41-43)**;

--access with an engine of the offload engine a flag that indicates whether the first precondition has been met by said appending the packet payload to the first buffer of the offload engine **(See col. 17, lines 19-24)**;

--access with the engine another flag that indicates whether the second precondition has been met by the packet payload being appended to the first buffer in view of previous packet payloads that have been appended to the first buffer **(See col. 21, lines 13-17)**;

--copy at least a portion of the first buffer of the offload engine to the receive buffer of the host memory in response to meeting the first precondition **(See col. 15, lines 49-52)**;

--repeat the method each time the first precondition has been met until meeting the second precondition. **(See col. 17, lines 19-24)**.

Regarding claim 19, Firoozmand further discloses the article of claim 17 wherein the storage medium further comprises machine-readable instructions to copy the at least a portion of the first buffer to the receive buffer without notifying a host processor **(See col. 15, lines 49-52)**.

Regarding claim 20, Firoozmand further discloses the article of claim 17 wherein the storage medium further comprises machine-readable instructions to receive packets at the first buffer **(packets received from the network [are] stored in the buffer memory by the medium access controller 120; See col. 15, lines 19-20)**.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 3 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Firoozmand in view of Galbi et al. **(U.S. Patent No. 7,099,328)**.

Regarding claim 3, Firoozmand teaches all the limitations of claim 1 above but fails to teach about a counter that offsets future copies from the first buffer to the host memory.

Regarding claim 18, Firoozmand teaches all of the limitations in claim 17, but fails to indicate the instructions to increase a count when a portion of the first buffer is copied to the receive buffer, which offsets future copies from the first buffer to the receive buffer.

For both claims, Galbi et al. teaches that the buffer has an associated in use counter that keeps track of the number of events, which are using the data in the particular buffer **(See col. 11, lines 63-37)**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify the method of Firoozmand to include the count device that offsets the location in the receive buffer where the contents of the first buffer are to be copied taught by Galbi et al. in order to control the threshold level of the memory, thereby preventing an overflow of the memory.

8. Claims 7 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Firoozmand in view of Weng et al. **(U.S. Patent No. 7,012,926)**.

Regarding claim 7, Firoozmand teaches all limitations of claim 1 above but fails to teach about a precondition indicating a predetermined percentage of the buffer being filled with payload data.

Weng et al teaches the method of claim 1 wherein the first precondition comprises a predetermined percentage of the first buffer of the offload engine being filled with payload data **(achieved by dividing the buffer into segments based on the threshold; See Fig 5)**.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify Firoozmand to include the predetermined percentage of the first buffer of the offload engine being filled with payload data taught by Weng et al. in order to provide the option to only place a percentage of the total packet into the buffer at a time, thereby improving the performance of the memory.

Regarding claim 21, Firoozmand teaches a method comprising:

--setting a first (**See col. 15, lines 30-31**) and a second (**See col. 17, lines 22-23**) precondition in a system for receiving packets;

--receiving packets of a network transmission at a network offload engine of the system (**See col. 19, line 41**);

--copying at least a portion of the received packets to a host buffer without notifying a host processor in response to the system meeting the first precondition (**See col. 15, lines 49-52**);

--repeating the method until meeting the second precondition (**See col. 17, lines 19-24**);

--notifying the host that the second precondition has been met (**See col. 21, lines 13-17**);

--copying any remaining of the received packets in the network offload engine to the host buffer after said notifying the host (**the network access controller supplies an acknowledgement back to the DMA controller, and then outputs a storage address, followed by a read command, to buffer 126; See col. 17, lines 31-35**).

Firoozmand fails to teach the re-setting of the first precondition.

Weng et al. teaches re-setting the first precondition (**a write-back operation is performed on the associated descriptor so as to reset the descriptor to unused status; See abstract, lines 15-17**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify Firoozmand to include the re-setting of the first precondition taught by Weng et al. in order to allow for varying thresholds to be set, thereby allowing different packet sizes to be transmitted.

Regarding claim 22, Firoozmand in view of Weng et al. teaches the method of claim 21 above. Firoozmand further teaches of copying the at least a portion of the received packets of the offload engine to the host buffer without notifying the host processor comprises copying the at least a portion of the received packets prior to receiving all of the packets of the network transmission **(See col. 15, lines 49-52)**.

Regarding claim 23, Firoozmand in view of Weng et al. teaches the method of claim 21 above. Firoozmand further teaches wherein receiving packets of the network transmission at the network offload engine comprises receiving packets at a first buffer of the network offload engine **(See col. 19, lines 41-43)**.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Firoozmand in view of Snyder II et al. **(U.S. Patent No. 6,888,830)**.

Regarding claim 9, Firoozmand teaches all the limitations of claim 1 but fails to teach the precondition with a timer that recognizes how long ago the first precondition was met.

Snyder II et al. teaches of a scheduler that is separated into time periods where a "1" indicates a reservation at that time period. It retrieves scheduling parameters cached in the buffer **(See col. 2, lines 22-26)**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify the method of Firoozmand to include the predetermined time period having passed since said setting of the first precondition taught by Snyder II et al. in order to indicate the time to move on to the second precondition.

10. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Firoozmand in view of Weng et al. and in further view of Galbi et al..

Regarding claim 10, Firoozmand teaches a network offload engine comprising:

--a first buffer to store packet payloads of at least some of the received packets **(See col. 19, lines 41-43)**;

--a second interface to a host memory to copy the packet payloads that are stored in the first buffer to a receive buffer in the host memory in response to a first precondition **(the data addressed in the buffer 126 is written to BDATA (a data bus); See col. 17, lines 35-36)**;

--logic to copy contents of the first buffer to a location in the receive buffer of the host memory in response to the first precondition being met (**if the number of words in the buffer 126 received from the network exceeds the value RTHR of the receive threshold the program jumps to [the location] whereat receive data from the buffer is transferred to the system; See col. 15, lines 58-62**), the logic to notify a host in response to meeting a second precondition (**See col. 21, lines 13-17**).

Firoozmand fails to teach about the first interface to receive the packets from the network interface and the count device to offset the location in the receive buffer where the contents of the first buffer are to be copied, the offset being relative to the received packet payloads that have already been copied from the first buffer to the receive buffer.

Weng et al. teaches

--a first interface to receive packets from a network communication link (**a conventional packet receiving-transmitting method for handling each packet involves the use of a descriptor list for packet reception; See col. 1, lines 25-26**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify the method of Firoozmand to include the first interface to receive packets from the network taught by Weng et al. because the explanation provided for the descriptor indicates that the descriptor points to the buffer and the packet is received on the descriptor.

Galbi et al. teaches about the count device that offsets the location in the receive buffer where the contents of the first buffer are being sent (**the buffer has an associated in use counter that keeps track of the number of events, which are using the data in the particular buffer; See col. 11, lines 63-37**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify the method of Firoozmand to include the count device that offsets the location in the receive buffer where the contents of the first buffer are to be copied taught by Galbi et al. in order to prevent overflow of data when the buffer is at maximum capacity.

Regarding claim 11, the combination of Firoozmand, Weng et al., and Galbi et al. used in claim 10 causes this claim to be rejected for the above reasons. However, in addition to the event taught by Galbi et al. helping to prevent overflow of data in the receive buffer, it also helps track how many bytes have been copied from the first buffer to the receive buffer.

Regarding claim 12, Firoozmand combined with Weng et al. and Galbi et al. teach the limitations of claim 10 above. Firoozmand further teaches of the network offload engine further comprising a direct memory access engine to copy payload data from the first buffer to the receive buffer (**when the amount of data stored in the buffer 126 exceeds a receive threshold value, the network DMA controller 124 then transfer the packet data to the system memory to be processed by the host processor; See col. 15, lines 30-34**).

Regarding claim 13, Firoozmand, Weng et al., and Galbi et al. in combination teach the above limitations of claim 10. However, Firoozmand fails to teach what type of network communication link is used.

Weng et al. further teaches, the network offload engine of claim 10 wherein the network communication link comprises a cable for Ethernet communication **(in this preferred embodiment, the method of the invention is utilized on Ethernet; See col. 6, lines 8-10)**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention would know to modify Firoozmand to include a network communication link that comprises of a cable for Ethernet communication taught by Weng et al. in order indicate show the form of communication used to connect the various network components.

11. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Firoozmand in view of Fred Halsall's *Data Communications, Computer Networks and Open Systems*.

Regarding claim 14, Firoozmand teaches a system comprising:

--a host processor to host applications for receiving packets **(node processor 174; See Fig. 5)**;

--a host memory having a receive buffer to store packet payload data received from a network communication link communicating with the host **(buffer in the system memory/host memory 125a; See fig. 16a)**;

--a network offload engine to receive the packet payload data in a first buffer **(See col. 19, lines 41-43)**, the network offload engine having an engine to copy the packet payload data in the first buffer to the receive buffer of the host memory independently of notification of the host processor and in response to the first buffer meeting a first

precondition **(See col. 17, lines 19-24)**, the engine to notify the host processor in response to a second precondition being met **(See col. 21, lines 13-17)**.

Firoozmand fails to teach what communication is used to send the packets initially to the host processor.

Fred Halsall teaches using an unshielded twisted pair communication link to transmit packets **(unshielded twisted pairs are used in many data communications applications)** in his book *Data Communications, Computer Networks and Open Systems,* Fourth Edition on page 26 under section 2.1.2.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify Firoozmand to include the unshielded twisted pair communication link to transmit packets taught by Fred Halsall in order to show that it is common to use an unshielded twisted pair to move packets.

Regarding claim 15, Firoozmand further teaches the system of claim 14 wherein the network offload engine further comprises a direct memory access engine for copying the packet payload data in the first buffer to the receive buffer **(See col. 15, lines 30-34).**

12. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Firoozmand in view of Fred Halsall and further in view of Weng et al..

Regarding claim 16, Firoozmand and Fred Halsall teach the above limitations of claim 14 but fail to teach what type of communication link is used.

Weng et al. teaches, the system of claim 14 wherein the unshielded twisted pair communication link comprises an Ethernet adapter **(See col. 6, lines 8-10).**

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Firoozmand to include an unshielded twisted pair communication link comprising an Ethernet adapter taught by Weng et al. in order to provide a way to bring the network components together

Conclusion

13. Any response to this action should be **faxed** to (571) 273-8300 or **mailed** to:

Commissioner of Patents,
P.O. Box 1450
Alexandria, VA 223103-1450

Hand delivered responses should be brought to:
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401 Dulany Street
Alexandria, VA 22314

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashley L. Shivers whose telephone number is (571) 270-3523. The examiner can normally be reached on Monday-Thursday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benny Tieu can be reached on (571) 272-7490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ALS

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